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ABSTRACT

While nothing new is expected and anything significant seems too dangerous, it is still necessary to examine critical problems in the field of curriculum and innovation. The problems and prospects of curriculum may be grouped according to management, structure, and purpose. Information together with an institutional willingness to get the greatest educational benefits from its budget can result in major outcomes in educational management. If the basic restructuring of instructional and credit systems is to be effective and maintained, the explicit degree goals and standards must be established along with new assessment procedures for determining the individual attainment of these standards. Just at the time we may perceive the need to instill certain attitudes and values in people, we appear to have no transcendent or common commitments. Liberal education must deal with values in a culture with little consensus, and with all the conditions that facilitate further atomization. (Author/KE)

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Curriculum Innovation: Three Dimensions

TEACHING-LEARNING ISSUES

Prepared by the Learning Research Center
The University of Tennessee

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This number of TEACHING-LEARNING ISSUES has been prepared by John Harris, director of the Division of Instructional Research and Service, and Steve Keller, a former doctoral student in the Department of Higher Education, at Florida State University.

You can not teach a man anything; you can only help him to find it within himself.

Galileo

Learning Research Center
The University of Tennessee, Knoxville

Oftentimes when discussions arise about curriculum innovations, seasoned faculty members and administrators respond with the pessimism of Ecclesiastes (1-9): "There is nothing new under the sun." Much of what is heralded as new is old and its assets and liabilities are well known. In recent years, many save-the-day schemes have turned out to be forgotten fads.

Curriculum change has been not only a dreary succession of advocated positions abandoned and forsaken but also the hope and disappointment of men of great stature. Eliot wanted external examiners at Harvard but did not get them; the Hutchins' experiment flowered and died at Chicago; Woodrow Wilson attempted to corral the eating clubs at Princeton and to implement the gentleman/scholar preceptorship but failed miserably in the former and only partly succeeded in the latter (Bragdon, 1967). Few things seem so unyieldingly resistant to alteration by direct intervention as the curricula of colleges and universities. Many scholars are surely "put off" by this topic—Curriculum and Innovation; nothing new is expected and anything significant would be too dangerous to attempt. Nonetheless, because changes are beginning to be mandated and because the trend may accelerate, it is necessary that critical problems continue to be examined. The problems and prospects of curriculum may be grouped as follows:

(1) *Management.* Given the present structures, what can be done to manage effectively a college or university's curriculum?

(2) *Structure.* For mass higher education, there are basic problems with a time-based, academic credit system. What are these problems and how might they be alleviated?

(3) *Purpose.* Once better means of managing higher education and more appropriate grading and crediting systems are developed, what will we teach or require students to know? While there are at least glimmers of how we might go about determining purposes and standards for curricula that are professionally oriented, how do we determine purposes and standards in a pluralistic society in which even those pluralistic structures are being atomized?

MANAGEMENT

Issue. Higher education is a costly enterprise and its costs tend to rise faster than general inflation. Economics in higher education will be realized primarily by savings related to personnel; approximately 80 percent of the costs are for people, and a significant proportion of the people costs are faculty costs. A major way to affect faculty costs is through managing the curriculum; that is, what faculty do is heavily influenced by what the curriculum of a college or university calls upon them to do. Rather than managing the curriculum so as to reduce the number of faculty, we need to manage the curriculum so as to make time

available to faculties to reform and improve curricula and instructional practices. Specifically, faculty need more time to prepare better for fewer courses, to develop instructional programs systematically, and to deal personally and directly with the learning problems of individual students.

Perspective. Administrators will need information on two major dimensions of curriculum costs if they are to manage curricula for greater effectiveness (insure minimal levels of mastery) and economy (efficient in terms of student and faculty time and general institutional expense). First, they will need to know the varying costs of degree programs. One liberal arts college discovered that the costs of producing a typical graduate in music was approximately $20,000 compared to $3,000 for a sociology graduate. Given such information, better decisions could be made in starting, stopping, or modifying particular degree programs. Second, institutions need to know the costs of individual courses, the frequency of their offerings, and the extent to which they pay for themselves.

A few simple analyses of curriculum can reveal interesting things for management. For example, a major university with an enrollment of about 20,000 and a faculty of approximately 1,400 discovered that it had more than 7,000 courses in its curriculum master file. Of that number, 26 percent had not been taught over a period of three consecutive years; the institution's functional curriculum was only three-quarters the size of its catalog one. Furthermore, a relatively small number of courses accounted for a very large share of the total student credit hours (SCH's). Of 4,035 different courses taught in one 12-month period, eight of them accounted for the first 10 percent of the SCH's and 21 (including the previous eight), the first 20 percent. On the other hand, 2,671 courses, or 66 percent of the total, accounted for the last 10 percent of the SCH's. If there were an institutional commitment to improve instruction as much as possible with limited resources, it is clear which courses ought to receive the most attention in order to promote the greatest effect for the greatest number of students.

In this same study, a crude cost-versus-income analysis was made for each course during one Fall Quarter. (Cost was defined as the proportion of the professor's salary for the full quarter allotted to a particular course; income was defined as the revenue that the course enrollment would generate by the funding formulas). Only 40 percent of the 1,890 courses taught generated enough income to meet the equivalent of the professors' salaries allotted to them. Put another way, 1,142 of the 1,890 courses did not generate enough income to cover faculty costs alone. Twenty-three percent, or 434 of the courses, generated less than one-fourth of their faculty costs.

Conclusion. Given the present structure of American college and university curricula (time-based credit system and course mode of instruction), the availability and use of certain information will enable an institution to manage its curriculum more effectively and economically. Information together with an institutional willingness to get the greatest educational benefits from its budget can result in three major outcomes:

(1) The catalog curriculum can be reduced to include only those courses actually taught at least once during a two- or three-year period.

(2) Deliberate decisions can be made about which money-losing courses or programs are kept for their recognized, intrinsic value or particular institutional need versus those that both lose money and make little unique contribution.
(3) Perhaps of most importance, faculties and administrations can make better decisions about where and how to commit enrichment and improvement dollars.

STRUCTURE

While better management of time-bound curricula is critically needed, it is doubtful that basic educational changes can be effected through it. Only a fundamental restructuring of the credit system can deal with our intensifying dilemmas.

Issue. Within institutions of higher learning, we teach students in the same way for the same amounts of time. Given its sameness in method and time of instruction, higher education, therefore, comes to serve as a common reference that exposes variance in students and produces graduates with widely varying competencies. Present grading practices and course structures do not insure minimal levels of proficiency in graduates and do not easily allow for, much less make good use of, differences in learning styles, readiness, and aptitude for learning. The assumption that quality could be assured through sameness in amounts of exposure and competitive grading systems may have been possible when higher education was for an elite few, but it is not tenable in a system for the masses. Time-based, course-bound modes of curriculum serve as screening devices rather than as learning facilitators.

Perspective. Differences between the intellectual achievements of graduates of one institution and another are accounted for more by differences in their admissions programs than by differences in instructional efforts. A variety of types and levels of studies support this conclusion. For example, Astin (1968) compared the achievements of graduates (mean GRE scores and number of academic awards such as Woodrow Wilson fellowships, etc.) from a number of relatively "strong" colleges and universities. He found marked differences among the achievements of the graduates from the various institutions but practically all of the differences could be explained by student differences at admission.

In another investigation, Harris and Hurst (1972) analyzed the CLEP General Examination scores of nearly 200 students in a state college who had taken the exams as beginning freshmen and again at the end of the sophomore year. The students who received A's and B's in their courses typically had higher test scores than the C students but had similar average gains over the two years; the same was true for D/F students as compared to C students. The analysis in one field of study is illustrative. The letter grades in the table are the marks the students received in freshman English and the scores are their CLEP English General Examination scores as first quarter freshmen and ending sophomores.

	Scores	
Grades	*Freshmen*	*Sophomores*
A/B	565	618
C	465	518
D/F	438	477

It is interesting to note that the A/B students in English composition came into the course 100 points higher on the CLEP English General Examination than did the C students. They also had the same mean gain over two years.

In general, many of the differences in post-college achievement scores are accounted for by differences in admission of pre-college scores. Obviously, the question arises as to what value-added differences exist among these institutions. If institutions were ranked on the basis of student achievement relative to attainment at entry, it may be, as Arthur Chickering (1971) has argued, that the least selective colleges have the most effect. Institutional prestige as determined by the success of its graduates does not necessarily indicate the differential instructional effectiveness. This appears to be true not only of measured achievement but also of more general factors, such as value orientation and success after graduation. Chickering (1971) showed that liberal arts colleges, for example, directly and indirectly select and admit students who already possess the attitudes hoped for in their graduates. Picking winners virtually assures success, but value-added assumptions are more apparent than real.

The intention here is not to inveigh against collegiate institutions with established reputations and prestige; rather it is to emphasize that under present time-based, competitive grading structures, institutions are not able to determine the quality and effectiveness of their instructional efforts. As long as the award of academic credit and degrees is based more upon time than attainment, differences among institutions in the achievement of students will be determined more by who is admitted (input) than by what is done with them (curriculum and instruction).

Several studies seriously question time as a major criterion by which students earn credits and degrees. Learned's and Wood's (1938) very interesting examination of Pennsylvania colleges revealed quite clearly that time is not correlated with measured student attainment. They used a test which covered the following areas: literature, general science, fine arts, vocabulary, social studies, and history. One result was that in ten liberal arts colleges, one-third of the freshmen achieved higher scores in English than did the lower half of seniors. More importantly, the authors selected a representative college with a graduating class of 200 for detailed analysis to determine who would graduate if degrees were awarded on the basis of performance of the college's best 200 students on a comprehensive examination. Instead of conferring degrees on the 200 students who had completed the required four years of study, the following students would have received baccalaureates: 25 percent of the seniors, 28 percent of the juniors, 23 percent of the sophomores, and 24 percent of the freshmen. Moreover, the mean age of graduates would have been 20 rather than 22, and the mean comprehensive examination score would have been 754 rather than 592. Finally, the student with the highest individual score was enrolled in the college with the lowest average student scores. When asked for an explanation, the student simply noted that he regularly read the Sunday edition of the *New York Times*.

In these instances collegiate eduction's commitment to fixed amounts of educational exposure was not highly related to achievement. In reviewing the Learned and Wood study, Watson (1938) observed:

> Schools and colleges, like prisons, have dealt with their inmates largely on the basis of a required sentence of time to be served. A college education normally requires four years after high school. During those years a prescribed number of credits will be earned, and each of them requires so many hours spent in assigned classrooms, libraries, and laboratories. There are, of course, certain things required to "pass" the courses; but over and above those, the only measure of education commonly used is time. However brilliant the student's performance, he usually must still serve his hours for each credit, and accumulate his credits over the required four-year plan (p. 17).

Husén's (1972) international cross-cultural study offers additional support for this conclusion. When Husén compared different levels of math achievement in 13-year-olds and in pre-university students in 12 countries, he found that time, whether measured by length of the school week amount of direct instruction, or number of hours of homework, was insignificant in accounting for different levels of achievement. In Norway, Husén found only slight differences in math achievement between those students who were out of school for one-half of the year and those who attended for the full year.

Accompanying the problems associated with time-based education is a grading system that makes use of normative rather than pre-set standards; in addition to requiring students to spend fixed amounts of time in courses, students are graded according to how well they perform relative to the performance of other students. They are not graded usually against subject matter standards as they would be if institutions were to certify the absolute rather than the relative achievements of their graduates. Normative grading, however, is an advantage for maintenance of high standards in an elitist educational system. Elitist education identifies and polishes brilliant students because competitive admission practices select brilliant students who continue to compete for high marks. On the other hand, the liabilities of curve grading are disastrous in mass higher education; when selection standards are lowered or eliminated, typical performance is lowered; then a degree's value is lowered also.

Another critical detriment of time-bound education is the lack of incentives and ways for institutions to determine which means and methods of instruction are best for helping students reach desired performance levels. Given the variation of students in classes in collegiate institutions, the absence of pre-set standards of minimum attainment requirements may be a major factor in repeatedly finding "no significant differences" among teaching methods (Dubin and Taveggia, 1965; McKeachie, 1970; and Milton, 1972). The "no significant differences" among different instructional approaches are often the fault of tests that are not sensitive to "treatment" (instructional) differences.

Normative tests are composed ideally of items that some students answer correctly and others do not. The best such item is one that half the subjects answer correctly and half do not. This criterion of selecting items excludes items that all the students answer correctly and items that no students answer. If any given item were a good measure of a proficiency and all the students were proficient, or none of the students was proficent, in both cases the ideal of normative testing would dictate that the item be excluded from the test. Thus, the only items usually kept are

those that discriminate, that is, those which will rank order students, while items that reflect definite competence but do not discriminate are cast out. The result of such tests is that gradations of presumed proficiency are made manifest, while measures that distinguish the possession of a proficiency from the lack of it may not be.

Tests are needed that will indicate the possession of a competency from the absence of it. Criterion rather than normative measures are required if we are to identify those who have been thoroughly trained in an area from those who are moderately able but lack the unique expertise or scholarly attainment represented by collegiate degree standards.

Conclusion. Several distinct but interrelated problems emerge. Are alternative approaches needed or can American higher education continue to a) try to accommodate an egalitarian commitment within present structures; b) strain to economize with current lock-stepped, time-based curricula and credit systems; c) attempt to meet off-campus, lifelong learning needs by add-on programs rather than basic curriculum revisions that make irrelevant time, place, and means of learning; d) emphasize information delivery rather than critically judge information and ability to use it; and e) utilize normative measures rather than direct assessment of individual performance against public and explicit standards?

While at present most collegiate institutions lack explicit degree standards and require the accumulation of credits based on relative rather than absolute measures, there is some evidence of efforts within the higher education network to remove time and relative grading structures rather than continue to try to fine tune them for maintenance purposes. Several institutions and state agencies are devising programs and curricula which base the award of credits and degrees upon competence rather than upon time spent and relative performance. Thus, by using pre-set standards and requiring minimal achievement without regard to how and when attained, these institutions and agencies are attempting primary reform and restructuring of collegiate structures as a way out of the dilemmas arising under time-based education. Alverno College, as one example, is a Catholic liberal arts institution that has adopted a competency-based curriculum for all students. A syllabus of proficiencies has been set forth for a Bachelor of Science in business at Syracuse with the view that demonstrated competency is to be the chief criterion for earning the degree. The support for such programs appears to be growing, particularly among the foundations and The Fund for the Improvement of Post-Secondary Education.

Perhaps the major problem, however, to be faced in moving from a time- to attainment-based educational system is the need for better and more direct ways of assessing student achievement. If the basic restructuring of instructional and crediting systems is to be effected and maintained, the explicit degree goals and standards must be established along with new assessment procedures for determining the individual attainment of these standards. Moreover, the greater the extent to which grades, credits, and degrees are referenced against clear and public standards, the greater will be the use of juries of faculty and other experts, rather than a lone instructor, to judge whether students have met the standards.

The concept of having someone other than the instructor examine his

own students is not new to American education. Dartmouth used external examiners as early as 1831; as pointed out earlier, Eliot advocated external examiners for Harvard but was unable to get them; Aydolette at Swarthmore and Hutchins at Chicago were able to have external examiners—the legacy has survived only in the Honors program at Swarthmore.

Bloom (1954), who played a major role in Hutchins' establishment of a Board of Examinations at Chicago for all undergraduate students, described the rationale for the practice as follows:

> In planning the new curriculum in general education, the faculty wish to separate the examining, judging function from the pedagogical function. They wish to have the instructor serve primarily to help students learn, and they believe that an idea of student-teacher relationship was impossible when the teacher also had the responsibility for judging and grading the student. (p. 297).

The modern counterpart of this principle can be seen in the establishment of new institutions and agencies within various states that award credit and degrees on the basis of examined proficiency. One example is the College Proficiency Examination program of the University of the State of New York established by the Board of Regents for the purpose of awarding collegiate credit for performance equivalent to that of a normative group of students within the state's higher education system. It is presently being broadened into a comprehensive degree program known as the External Degree Program of the State of New York. In New Jersey, the Commission of Higher Education has cooperated with New York to develop an external degree program to be administered through a new institution, Thomas A. Edison College. The Newman Task Force on Higher Education suggested that Regional Examining Institutes be established; their major purpose would be to assess and certify individuals' collegiate achievements without regard to how and when they were attained.

Such changes, of course, have many implications for both faculty and institution roles. Removing time-based and lock-stepped curriculum will make possible the effective use of vast arrays of communication technologies and learning experiences. Given the effectiveness of instructional technologies in information delivery, students would be freed to sample from a wide variety of instruction, while faculty could help them plan and integrate their programs to achieve their own goals as well as to meet explicit degree goals. Faculty, then, must be willing not only to make known explicitly the standards for degrees but also to work more directly with students in finding and guiding their learning experiences that lead to the attainment of these standards. This suggests the faculty role as purveyors of information will be lessened with a concomitant increase in their roles as jurists and mentors.

On the other hand, institutional response to attainment-based curriculum and instruction should move from an anticipatory to an *ad hoc* approach to curriculum development. In this regard, we are reminded of the discretion of the "grounds people" of one university who put down sidewalks only after students made paths to and from a new building. This, of course, is related to Freeman's (1973) argument that institutions should "find order in" rather than "impose order on"; arbitrary structures in curriculum and instruction may impede rather than

foster development of the knowledge and skills we are seeking in students.

Curriculum "grounds people" can try to anticipate where students will walk or arbitrarily say that they should walk certain routes and put the walkways there. Or they may wait and see where the students make paths and then make walkways of the paths. We believe the latter is the surer way to build curricula. Establish the destinations—degree standards—and on a pilot basis have an inventive, resourceful teacher become the mentor for a few students. Give him and the students a free hand about the pace and manner in which the students move toward the degree goals. The mentor should be able to draw upon all the institution's and community's resources for learning and have help in developing needed new ones. While the institution allows and encourages flexibility in means of reaching the degree goals, it should be very firm in judging the attainment of these goals.

After the pilot is completed, the learning paths that the students have made may become the basis on which to design systematically the learning experiences that are most effective and efficient in helping the students master the degree standards. One may associate the anticipatory approach with the adjectives "abstract," "deductive," and "scholastic," while the *ad hoc* positions we advocate are associated with "inductive," "trial and error," and "pragmatic."

Finally, institutional advocacy of the adoption and use of technological developments in instruction is likely to encounter initial stiff resistance. At one university, nearly two years of discussion and debate over a proposal to use the audio-tutorial approach in veterinary medicine—as employed by Postlethwaite (1965) in botany—yielded no results. Yet, when one faculty member began to use the approach on a small scale in his own course, enthusiasm occurred among other faculty after only three months of operation. Rationales and philosophies of educational practice appear to produce reaction; examples in deeds appear to elicit positive action.

PURPOSE

Issue. When a contemporary heard of Alexander Graham Bell's telephone, he asked, "What will he say over it?" Stark Young (1962) raises a similar question in an interesting response to the notion of inevitable "progress." He reports being engaged in dialogue with someone who was bragging about the progress of a town by citing the fact that the town now had 20,000 miles of concrete walks. Young's response was "And where do they lead (p. 235)?" Given better curricular management tools and the more appropriate structure of attainment rather than time-based curricula, we will be even more pressed by the question, "What will we teach?" This is not as onerous a question in professional education as it is for liberal education.

It is generally conceded that education follows culture. When cultural consensus wanes, liberal education has little either to preserve or react to. As the lack of authority is the nemesis of our culture (Nisbet, 1972), so it is of liberal education. While the first two sections of this paper proposed solutions, this section makes no such proposals—it only etches some dilemmas.

Perspective. Liberal education for Bishop Newman (1960) meant the refining of a Christian gentleman; he wanted young, Irish Catholic men

to have what English Protestants found at Oxford. Generally, one can say that liberal education is exposure to and involvement in art, literature, and science to affect one's values in directions not predetermined. This is not, we believe, what Newman had in mind or what we generally practice in the name of liberal education today. While the prevailing aims of liberal education are secular rather than religious, academicians generally have definite goals for liberal education whether implicit or explicit. Despite the lack of consensus, we usually believe we know how to educate so as to liberate. The religious man knows what will free one as does the dedicated patriot. But toward what attitude and value ends does education aim in a society as atomized as ours?

Without cultural consensus, the teacher is without direction and finds no open path except to critique all commitments; in such a culture, the ideal educated man seems to be the uncommitted cosmopolite separated from the limitations and support of community, province, kin, race, and given religious or philosophical persuasions. While aiming at the ideal of the autonomous, rational Greek, such education has become the handmaiden of technocracy by cutting ties; people become personnel measured and interchangeable. For example, one is not encouraged, in some companies, to stay too long in one community lest his commitments that that place become stronger than those to the company.

It seems that the perspectives of C. S. Lewis (1947) and of B. F. Skinner (1971) epitomize the dilemmas in an education that is directly designed to affect attitudes and values. The two, from different perspectives, set before us the dilemma of society with horizontal, relative, authority versus vertical, absolute authority.

Lewis pointed out that the great religions provide men with a vertical dimension against which the affairs of life can be judged. Concomitant with technological advance is the decline of the great religions. With that decline, society is left with only the horizontal dimension so that all matters of value become relative. "My art is as good as yours and who is to say it isn't?" "My belief is as good as yours, and I am not obligated to set it against any standards or to explain it in any way." This at first seems a move for the better given the tyrannies of authoritarians so often associated with absolutes; but tyrants of the past could always be judged by divine standards. Now without common acceptance of such standards, all values become relative—hence, there is as much opportunity for the malicious as for the well intentioned. Shanks (1973) puts it this way, "There is a clear connection between the syndromes of 'God is Dead' and 'I want it Now'—and to say this is to make an observation of fact and not a moral judgment (p. 20)."

The ominousness of the prospect before us includes not just relativism that gives tyranny a new lease but the more subtle means of behavior control now available. Lewis alludes to this but Skinner makes the issue quite explicit though from a different perspective. Skinner points out that most of the literature on freedom is a cry against the stick not the carrot. That is, tyrants of the past usually resorted to aversive controls. Today, positive reinforcement schedules can be much more subtle and hence more powerful. Most of the great freedom literature is an outcry against coercion by punishment not by pleasant reward. Skinner also points out that Westerners accept mind but not behavior changing. That is, we support changes in behavior as a result of changing the mind; we balk at changing minds by changing behavior. We believe more in the inner light

of illumination than in the practice of piety. Change ought to be from the inside out rather than *vice versa*.

Just at the time we may perceive, as clearly as men ever have, how to develop certain attitudes and values in people, we appear to be without any transcendent or common commitments. There are no widely accepted philosophies that education can further or react to. An unsavory brand of hedonism might be the most likely candidate.

Thus the question before us is how to educate people in matters of value and attitude given the following four conditions of our culture:

(1) Relativism
(2) Positive rather than negative controls
(3) Affluence
(4) Increasing variation

The first two have been dealt with in terms of Lewis's and Skinner's perspectives. Affluence, while it brings great opportunity, seems to give us illusions of self sufficiency. It also appears to increase our inclination and capability to withdraw from one another. Finally, technology has increased variety rather than conformity. For example, advanced high speed printing has increased the variety of magazines—more special interest magazines versus the general interest ones. As the full capabilities of cable television are employed, the typical home or school will have access to over 40, or possibly 80, channels of information rather than the three or four commonly available now (Smith, 1970).

Liberal education must deal with values in a culture with little consensus faced with all the conditions that facilitate further atomization. Against this backdrop is the ominous possibility of control by positive reinforcers. They are subtle and frightening when coupled with our massive capabilities in communication technologies. At the very time we are most atomized, we also have the steady accumulation of means to tyrannize man as never before. Liberal education surely must find a way to address this dilemma.

The paradox set forth by Yeats (1920) is still before us:

> Things fall apart; the centre cannot hold;
> Mere anarchy is loosed upon the world,
> The blood-dimmed tide is loosed and everywhere
> The ceremony of innocence is drowned;
> The best lack all conviction, while the worst
> Are full of passionate intensity.

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